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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/649,631	08/28/2003	Hiroyuki Shinbata	03500.014457.1	5541

5514 7590 03/22/2005

FITZPATRICK CELLA HARPER & SCINTO
30 ROCKEFELLER PLAZA
NEW YORK, NY 10112

EXAMINER

AZARIAN, SEYED H

ART UNIT	PAPER NUMBER
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2625

DATE MAILED: 03/22/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/649,631

Applicant(s)

SHINBATA, HIROYUKI

Examiner

Seyed Azarian

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 28 August 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-10, 12-22 and 24-43 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1-10, 12-16, 24, 25 and 30-43 is/are allowed.
- 6) ☒ Claim(s) 17-22 and 26-29 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 28 August 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☒ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 8/28/03.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

Double Patenting

1. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321^o may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

2. Claims 17-22 and 26-29 rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1 and 2, of U.S. Patent No. 6,678,400. Each of the limitation set forth in the claims of the instant application is defined in the claims of the patent.

As an example consider claim 17, of current application, compared to claim 1, of patent application, it disclose an image processing method for performing a dynamic range compression processing to an arbitrary image to add a high frequency component obtained based on the image, the image processing method comprising' (column 22, lines 37-40);

Wherein said conversion means converting the magnitude of the amplitude of the amplitude of the added high frequency component based on the magnitude of the high frequency component (column 22, lines 41-45).

DETAILED ACTION

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 17-19, 21-22 and 26-29, are rejected under 35 U.S.C. 102(b) as being anticipated by Tsuchino et al (U.S. patent 5,493,622).

Regarding claim 17, Tsuchino et al discloses an image processing method for performing a dynamic range compression processing to an arbitrary image to add a high frequency component obtained based on the image, the image processing method comprising, (column 6, lines 45-63, compression processed, the desired dynamic range can be secured, and the dynamic range of the high frequency range can be extended so that the contrast is enhanced);

conversion means for converting a magnitude of an amplitude of the added high frequency component based on a magnitude of the high frequency component (column 3, lines 14-27, converted into the processed image signal, and high spatial frequency range of the original image signal Sorg is emphasis-processed, also column 14, lines 5-22, correction function (f1 and f2) are added to each other).

Regarding claim 18, Tsuchino et al discloses an image processing method for performing a dynamic range compression processing to an arbitrary image to add a high frequency

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component obtained based on the image, the image processing method comprising: a converting step of converting a magnitude of an amplitude of the added high frequency component based on the pixel value of the arbitrary image (see claim 17, also column 10, lines 33-52, refer to corresponding to each pixel point).

Regarding claim 19, Tsuchino et al discloses a method according to Claim 17, wherein the arbitrary image includes any one of an original image, an image obtained by applying a gradation conversion processing to the original image, an image obtained by applying a smoothing processing to the original image, and an image obtained by applying both the smoothing processing and the gradation conversion processing to the original image (column 21, lines 19-36, the gradation conversion processing of the compression processed image provided, by the dynamic range of image (smooth signal difference between portion such as lung field portion, and a mediastinum portion)).

Regarding claim 26, Tsuchino et al discloses an image processing method for performing a dynamic range compression processing to an original image or a smoothed image of the original image to add the high frequency component of the original image and perform gradation conversion, said image processing method comprising the steps of (column 6, lines 45-63, compression processed, the desired dynamic range can be secured, and the dynamic range of the high frequency range can be extended so that the contrast is enhanced and column 8, lines 30-33, showing gradation conversion characteristics, and column 12, lines 26-35, refer to "smooth signal");

converting a magnitude of amplitude of the added high frequency component in accordance with a magnitude of the high frequency component (column 21, line 64 through

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column 22, line 7, frequency components depending on changes between pixels and a signal range).

Regarding claims 21 and 22, it recites similar limitation as claims 17 and 19. Hence it is similarly analyzed and rejected.

Regarding claims 27-29, it recites similar limitation as claims 17-19. Hence it is similarly analyzed and rejected.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claim 20, is rejected under 35 U.S.C. 103(a) as being unpatentable over Tsuchino et al (U.S. patent 5,493,622) in view of Barski et al (U.S. 6,269,176).

Regarding claim 20, Tsuchino fails to disclose “uses of morphological”. On the other hand Barski et al teaches (column 7, lines 17-29, for both gaussian smoothing and morphological operation of the data points at the two ends of the ID spectra).

Therefore it would have been obvious to one having ordinary skill in the art at the time of the invention was made, to modify Tsuchino invention according to the teaching of Barski et al because it provide and evaluates each pixel in a binary or gray scale image along with its neighboring pixels, which expedite existence of the desired image.

REASONS FOR ALLOWANCE

7. The following is an examiner's statement of reasons for allowance.

The instant invention generally relates to an image processing apparatus for performing an image processing, including a dynamic range compression processing for adding a high frequency component of an original image.

Claim 1 representative of claims 2, 7-10, 12-15, 24-25, 30-43, providing: control means controls to perform the gradation conversion based on the gradation conversion curve in said gradation conversion means after the high frequency component converted by said conversion means is added to the arbitrary image, or controls to add the high frequency component converted by said conversion means after the arbitrary image is subjected to the gradation conversion based on the gradation conversion curve by said gradation conversion means.

The closest prior art of record (Tsuchino) teaches, discusses a dynamic range compression of the original image, an expansion process, and the addition of a high frequency component. But do not suggest control means controls to perform the gradation conversion based on the gradation conversion curve in said gradation conversion means after the high frequency component converted by said conversion means is added to the arbitrary image.

These key features in combination with the other features of the claimed invention are neither taught nor suggested by the art of record.

Claims 1-10, 12-16, 24-25 and 30-43 are allowed.

Other prior art cited

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

U.S. patent (4,346,409) to Ishida et al is cited for method of and apparatus for processing a radiographic image.

U.S. patent (5,454,044) to Nakajima is cited for apparatus for enhancing image data using a monotonously decreasing function.

U.S. patent (4,731,865) to Sievenpiper is cited for digital image correction.

U.S. patent (4,315,318) to Kato et al is cited for method and apparatus for processing a radiation image.

U.S. patent (5,319,719) to Nakazawa et al is cited for processing apparatus for radiographic image signals.

U.S. patent (5,369,572) to Haraki et al is cited for radiographic image processing method wherein small variation of density is selectively made clear.

U.S. patent (6,480,300) to Aoyama is cited for image processing apparatus, image processing method and recording medium on which software for executing the image processing is recorded.

Contact Information

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Seyed Azarian whose telephone number is (703) 306-5907. The examiner can normally be reached on Monday through Thursday from 6:00 a.m. to 7:30 p.m.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bhavesh Mehta, can be reached at (703) 308-5246. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application information Retrieval (PAIR) system. Status information for published application may be obtained from either Private PAIR or Public PAIR.

Status information about the PAIR system, see [http:// pair-direct.uspto.gov](http://pair-direct.uspto.gov). Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Seyed Azarian
Patent Examiner
Group Art Unit 2625
March 20, 2005

A handwritten signature in cursive script that reads "Seyed azarian".